RG104 E-1 Box 130

Mint of the United States at Philadelphia,
MELTING AND REFINING DEPARTMENT,

Philadelphia, 27. December, 1883.

Sir

In response to your wish that I should express my opinion on the kind of copper, best adapted to our use in coinage, I respectfully reply:

1. That for the Bronze Cent Coinage any good commercial copper is suitable, because when it is alloyed with the due proportions of tin and zinc, the alloy is sufficiently soft for such coinage, altho' the softer the alloy is, the less do the expensive steel dies suffer injury.

2. That for alloyage with Nickel (whether for 25 or 33 pr.ct. of the latter) the best possible quality both of Copper and of Nickel is essential for conducting such coinage with due economy; in durability of dies, and for the

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perfection of the coin itself.

3. That for alloying gold and silver (especially the latter) to the usual 10 pr. ct. of alloying metal, it is of great importance that the very best quality of copper should be employed to secure rapidity and uniformity of work, the perfection of the coin, and economy in the manufacture.

In all manufacturing operations uniformity of production is an essential feature. Now with a somewhat inferior copper a much larger amount of metal unsuitable for coinage is returned by the Coiner to be remelted and softened if possible. In the act of melting silver, whether pure or alloyed, there is always and unavoidably a small loss of silver by volatilization, and this is repeated at each melting operation. Inferior copper, therefore,

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delays coinage operations, causes more or less loss of precious metal, and costs more in fuel, labor, and wear and tear of apparatus. Further, an inferior copper is apt to produce greater hardness of alloy, tending to wear and break the dies more than usual, and to cause flaws in the coin.

We have tried a variety of commercial coppers during the last ten or fifteen years, and have by far the most uniformly satisfactory results by the use of Pope, Cole, & Co's Best commercial copper, prepared expressly for our use. Moreover it is singular and significant that in the great majority of cases such copper was delivered at the mint at a lower rate than any other offered, and it has been extremely rare that any copper has been offered at a lower rate than the one named. Even if this particular copper were offered at a trifling higher rate than another, I would prefer purchasing it on the ground of greater economy

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in its use, and its uniform superiority in long continued use over every other. But when it is offered us at the same or a lower price than any other at all suitable in the market we should not hesitate, as manufacturers of from 50,000 to 150,000 pieces of money in a day or two, to purchase such copper and no other, in order to secure the uninterrupted manufacture of the best coin in a given time, with the least possible loss by wastage, and at the lowest rate of production. It should moreover be borne in mind that the only way to test copper for our use is on the large producing scale, and that the loss and cost of such testing is far greater than a possible difference of one or a few cents on the price of a pound of copper.

Very respectfully
I. P. C. Booth

Hon. A. London Snowden
Superintendent.

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1234

Mint of the United States at Philadelphia,

Melting and Refining Department,

Dec. 27, 1883.

Jas C. Booth

Melter and Refiner.

The kind of copper best adapted to our use in Coinage.

(Pope, Cole & Co.)

RECEIVED
DEC 27 1883
MINT PHILA.

No. of Enclosures,

NARA RG104, Entry 1, Box 130

[Abstract:] The kind of Copper best adopted to our use in coinage. 1234

Mint of the United States at Philadelphia,
Melting and Refining Department,
Philadelphia,
December 27, 1883

Sir

In response to your wish that I should express my opinion on the kind of Copper, best adopted to our use in coinage, I respectfully reply:

1. That for the Bronze Cent Coinage any good commercial copper is suitable, because when it is alloyed with the due proportions of tin and zinc, the alloy is sufficiently soft for such coinage, altho' the softer the alloy is, the less do the expensive steel dies suffer injury.

2. That for alloyage with Nickel (whether for 25 or 33 pr. ct. of the latter) the best possible quality both of Copper and of Nickel is essential for conducting such coinage with due economy; in durability of dies, and for the perfection of the coin itself.

3. That for alloying gold and silver (especially the latter) to the usual 10 pr. ct. of alloying metal, it is of great importance that the very best quality of copper should be employed to secure rapidly and uniformity of work, the perfection of the coin, and economy in the manufacture.

In all manufacturing operations uniformity of production is an essential feature. Now with a somewhat inferior copper a much larger amount of metal unsuitable for coinage is returned by the Coiner to be remelted and softened if possible. In the act of melting silver, whether pure or alloyed, there is always and unavoidably a small loss of silver by volatilization, and this is repeated at each melting operation. Inferior copper, therefore, delays coinage operations, causes more or less loss of precious metal, and costs more in fuel, labor, and wear and tear of apparatus. Further, an inferior copper is apt to produce greater hardness of alloy, tending to wear and break the dies more than usual, and to cause flaws in the coin.

We have tried a variety of Commercial Coppers during the last ten or fifteen years, and have by far the most uniformly satisfactory results by the use of Pope, Cole & Co.'s Best Commercial Copper, prepared expressly for our use, moreover it is singular and significant that in the great majority of cases such copper was delivered at the Mint at a lower rate than any other offered, and it has been extremely rare that any copper has been offered at a lower rate than the one named. Even if this particular Copper were offered at a trifling higher rate than another, I would prefer purchasing it on the ground of greater economy in its use, and its uniform superiority in long continued use over every other. But when it is offered us at the same or a lower price than any other at all suitable in the market we should not hesitate, as manufacturers of from 50,000 to 150,000 pieces of money in a day or two, to purchase such copper and no other, in order to secure the uninterrupted manufacture of the best coin in a given time, with the least possible loss by wastage, and at the lowest rate of production. It should moreover be borne in mind that the only way to test copper for our use is on the large producing scale, and that the

loss and cost of such testing is far greater than a possible difference of one or a few cents on the price of a pound of Copper.

Very respectfully,
Jas. C. Booth

Hon. A. Loudon Snowden
Superintendent.